it offered seven hours of free Internet service to customers who had both local and long-distance service provided by SNET.[7] In view of the small additional effort needed to buy long-distance services from an independent seller, it does not appear that SNET's market share translates into any significant measure of efficiency benefits.

76. Bundling of regulated and unregulated services makes the assignment of costs almost impossible. The resulting problems become more severe as time passes. To prevent the local carrier from monopolizing the long-distance market, the local carrier must be forced to offer unbundled local service at a regulated price. At first, this unbundled price can be administered as a price cap. As time passes, however, regulators would need to refer to actual cost to update the price cap. At that time, the untangling of costs of local service would be more difficult than ever if much of it was sold bundled with long distance. The result would almost certainly be an overstatement of local service cost, an unwarranted increase in the unbundled price of local service, and corresponding increases in long-distance prices. Where customers must buy their local service from the historical phone company, they will choose between the bundled price offered by the local carrier and the sum of the unbundled local price plus the price charged by an independent long-distance carrier. As a result, setting a high unbundled price for local service permits the local carrier to set a high bundled price that cannot be competed down by independent long-distance carriers.

2. Efficiencies in Marketing to Low-Volume Long-Distance Customers

77. Professors Harris and Teece argue that Ameritech has a comparative advantage in marketing to low-volume users of long distance.[8] In principle, this efficiency could arise independently of one-stop shopping. Specialists from the local phone company could market the unbundled services of a long-distance affiliate, applying expertise learned from local experience. Recognition of the local carrier's brand name is a factor identified by some commentators including Professors Harris and Teece. However, they

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[7] *Joint Affidavit of Robert Crandall and Leonard Waverman on Behalf of Ameritech Michigan,* April 11, 1997, p. 21.

[8] *Harris-Teece Affidavit*, p. 98.

recognize that these efficiencies will not be fully attainable as long as a separate subsidiary for long distance is required.[9]

78. Ameritech's offerings include $.15 per minute for low-volume customer and 60 minutes of usage for $5 a month. LCI already offers $.17 per minute for day calls, $.13 per minute for evening calls, and $.09 per minute for night calls with no minimum and U.S. Tel offers $.1319 per minute for day calls and $.1256 per minute for off-peak call again with no minimum.

3. Artificial Efficiency from the Act's Provisions on Local Toll

79. An unfortunate provision of the Telecommunications Act results in a completely artificial efficiency associated with permitting a local carrier to control a long-distance carrier. When that permission is given, but not before, regulators may compel the local carrier to offer presubscription to independent local toll carriers. In Michigan, the artificial efficiency is small, because about 70 percent of all of Ameritech's Michigan customers already have local-toll presubscription, thanks to regulatory efforts taken before the Act went into effect.[10]

4. Conclusions on Efficiencies from Control of a Long-Distance Carrier

80. I find no significant evidence that there are important efficiencies from a local carrier's control of a long-distance carrier. The conclusion that there were no important efficiencies was an important part of the logic of the splitting of the old Bell system into the local carriers and AT&T. There is no basis to conclude that the situation has changed.

D. The Value of the Requirement for a Separate Long-Distance Subsidiary

81. The Act requires that the long-distance affiliate controlled by the local carrier be organized as a separate subsidiary. I believe that the effects of this requirement are generally agreed by economists to be as follows: (1)

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[9] *Ibid.*, p. 100.

[10] Ameritech's *Compliance Filing and Request for Approval of Plan on IntraLATA Toll Dialing Parity*, Case U-11104, Michigan Public Service Commission

The segregation of cost information may have some value in preventing cost shifting, where costs of the unregulated long-distance operation are mis-reported as arising from regulated local operations, although such measures have not proved effective in the past. (2) It is unrealistic to expect that a parent will fail to consider its wholly-owned subsidiary's interests. In particular, the local carrier will consider the benefits that its long-distance subsidiary will receive if it withdraws cooperation from the subsidiary's rivals. (3) It is equally unrealistic to expect that a wholly-owned subsidiary will act other than in accord with its owner's interests. The long-distance affiliate of a local carrier will consider the effects of its actions on the consolidated profits of the integrated entity. Thus, the long-distance affiliate will consider the lost access profits of its parent when it takes business away from a rival. Even if the affiliate pays its parents the regulated access charge for the calls it carries, the affiliate will act as if its cost were actual access cost plus the opportunity cost associated with the lost access profit.

E. Evidence about Ameritech's Likely Role in Long Distance Based on Its Performance in Local Toll

82. Recently, regulators have overcome Ameritech's stiff resistance to competition in local (intra-LATA) toll markets in its territory, including Michigan. To the consumer's benefit, Ameritech faces competition from the four major long-distance carriers and from a number of smaller carriers in local toll markets. Though Ameritech's experts create the impression that the company would bid the price down in the long-distance market and reduce price differences between large and small users, nothing in Ameritech's pricing in the Michigan local toll market supports the proposition that it is a low-price seller.

83. Ameritech's customers pay a flat rate of 15 cents per minute for local toll calls. For higher volume customers, Ameritech offers Call Pack 20 service that lowers the price of local toll calls to 12 cents per minute but has a minimum spending level of $5 per month (that includes one hour of calling) specifically for local toll calls. Much better rates are available from other carriers. For example, MCI's price is 10 cents at all times of the day under MCI One, which includes low rates for interstate and international calls, with a $5 minimum charge per month applied across all MCI products. LCI already offers $.17 per minute for day calls, $.13 per minute

for evening calls, and $.09 per minute for night calls with no minimum and U.S. Tel offers $.1319 per minute for day calls and $.1256 per minute for off-peak call again with no minimum.

84. As these rates show, only Ameritech has failed to provide a plan for the low-volume user. MCI, Sprint, and WorldCom all provide local rates comparable to their long-distance rates.

85. Based on this evidence, it appears likely that Ameritech would be at the upper end of the price distribution were it to offer long-distance service. Unlike the more aggressive long-distance carriers, Ameritech would rely on methods other than the offering of low prices to attract customers.

86. Later, in section F of Part IV, I discuss the evidence that pricing patterns for toll calls reflect cost differences between low and high-volume customers and were not an artifact of high levels of market power. Based on Ameritech's pricing plans in its local toll markets, there is every reason to expect that Ameritech would follow the other carriers in adopting pricing plans that reflect the lower costs of serving higher-volume customers by promoting low-price plans selectively to these customers.

87. Both Ameritech's behavior in local toll markets and SNET's behavior after it began to sell long-distance services, reviewed in section F of Part VI, tell the same story: When incumbent local carriers compete with independent toll carriers, the local carriers position themselves toward the top of the distribution of rates. They do not offer telephone customers choices superior to those available from the independent carriers. The opening of local toll markets to competition has been beneficial because it has brought in low-price sellers, and will be even more beneficial if determined interference by local carriers can be overcome. On the other hand, the addition of high-price local carriers to the existing competitive long-distance market will not add to consumer welfare.

F. The Regulated Price of Access

88. A significant aspect of regulation, important for the issues surrounding Ameritech's application to enter long distance, is the regulated price of

access. Most observers agree that access is priced well above cost, and will remain so, despite the FCC's recent lowering of the charges.[11] The encouragement of effective local competition is the best hope in the longer run for achieving efficient access charges close to the level of economic cost. In the meantime, elevation of access charges distorts telephone markets in important ways.

89. One important inefficiency is the redundant provision of access to some business customers. It is inefficient for both the incumbent local carrier and a rival to provide access circuits to these customers if the result is underutilized circuits. To the extent that any customers are switching from wired access to wireless access, such as satellite or cellular access at stationary locations, an even greater inefficiency arises because wireless is substantially more expensive.

90. The overpricing of access would become a more acute policy issue if Ameritech and other local carriers were allowed to control long distance carriers. Because the vertically integrated carrier incurs the actual cost of access, whereas its long-distance rivals pay the substantially higher access charge, overpricing of access creates a cost advantage for the local carrier. Although the local carrier also incurs an opportunity cost if it takes long-distance business away from one of its access customers, this effect does not fully offset the cost advantage. Under efficient competition, with access priced not too far above cost, the existing long-distance carriers would sell more services at lower prices. Overpriced access means that the local carriers will capture a larger share of the long-distance market than they would capture under efficient competition. The price of long-distance service is higher, and the quantity sold is lower, than in the efficient case with properly priced access.

91. A local carrier has no special incentive to take long-distance business away from an independent carrier who is an access customer of the local carrier, because the foregone access charge becomes an opportunity cost. But the local carrier does have a special incentive to take business away from a long-distance carrier who is using other forms of access, whenever

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[11] Federal Communications Commission, *First Report and Order in the Matter of Access Charge Reform*, May 16, 1997.

the local carrier's actual access cost is less than the price of access set by the alternative access provider. As local competition develops, this factor may lead to more rapid expansion of the incumbent local carriers' long-distance affiliates than one would expect for an entrant lacking this artificial incentive. The corresponding effect on independent long-distance carriers would be larger—more of them would be driven out of the market or would fail to enter.

92. An important implication of this analysis is that the substantial share of the long-distance market achieved by local carriers, such as SNET, who have recently begun to control long-distance carriers, is no indication of efficiencies or other fundamental sources of consumer benefits. The likelihood that Ameritech will achieve 20 or 25 percent of the Michigan long-distance market should it be allowed to control a carrier in that market is no indicator of social benefits.

G. Formal Analysis of Vertical Integration and Cooperation

93. As I have stressed earlier, Ameritech's application for permission to control a long-distance carrier raises issues about vertical integration that arise in many contexts. A number of economists have studied the question of whether a monopoly seller of access has an incentive to cooperate with its rivals in the downstream long-distance market. A simple framework is the following: Would an access supplier voluntarily pass on cost-reducing information that would benefit its rivals in the long-distance market? That is, would providing the information raise the profit of the vertically integrated access supplier? A fair reading of this literature is that the answer is unambiguously no. *No author has found circumstances where rational conduct by the access supplier would cause it to help its downstream rivals.* Formal economic analysis speaks with one voice that, once the access supplier competes in the downstream long-distance market, it will try to interfere with its rivals in that market. It would lower, not raise, its profit, if it cooperated voluntarily. This conclusion follows whether or not the access price is regulated, whether or not the regulated access price is at or above cost, and whether or not the access supplier sells long distance through a separate subsidiary that maximizes its own profit.

94. The intuition behind the result that cooperation cannot be expected from a rival is straightforward. In every model of the interaction of firms in a market, a firm benefits by raising its rivals' costs. The result of the increased costs of rivals will be a combination of a higher market price and greater volume sold by the one seller whose costs do not rise. Both of these effects unambiguously add to that seller's profit. Placing the problem in the context of the presence of a vertically integrated access supplier in the long-distance market does not change the analysis. For example, suppose that the independent long-distance carriers behave competitively, supplying indefinitely large volumes of service if the price is at or above their cost, and nothing otherwise. Suppose further that the regulated price of access is above the cost of access but below the unregulated monopoly price. Finally, suppose that the access supplier can raise the costs of the independent long-distance carriers by withdrawing cooperation. If the supplier chooses to cooperate, its profit is limited to its regulated access margin, because competition guarantees that the price is equal to the cost of long-distance service including the regulated access charge. Thus the access supplier makes a profit on all access (including that supplied to its own subsidiary) to the extent that the regulated price of access is above cost and no long-distance supplier makes any profit. Now let the access supplier raise its rivals' costs. The access supplier can capture the entire long-distance market by pricing slightly below its rivals' cost level. It becomes a monopolist in the long-distance market. As it raises its rivals' costs further, it achieves the monopoly level of profit for the long-distance market. As long as the regulated level of the access charge does not already deliver the monopoly profit (which it surely does not, in reality), then the access supplier has an unambiguous incentive to raise the level of the price ceiling provided by the competitive long-distance industry.

95. Although my example is based on competition among the independent long-distance carriers, the same result applies if long-distance is modeled as an oligopoly, even one with much more market power and profit than suggested by the data reviewed earlier in this affidavit. A recent paper by David Sibley and Dennis Weisman considers a standard oligopoly model,

the Cournot model.[12] They demonstrate that the monopoly seller of access has an unambiguous incentive to withdraw cooperation from the downstream long-distance carriers and thus to raise their costs.[13]

96. Sibley and Weisman also consider the possibility that the long-distance affiliate of the monopoly seller of access is sufficiently isolated from its parent so that the affiliate maximizes its own long-distance profits and does not consider the effects that its activities have on the upstream access business of its parent. The affiliate pays the same regulated access charge paid by the independent long-distance carriers. In this case as well, under reasonable conditions, the monopoly seller of access has an incentive to withdraw cooperation and raise the costs of the independent long-distance sellers.[14]

97. In their analysis of the isolated subsidiary, Sibley and Weisman suggest that it is possible, under certain conditions that I find quite unreasonable, that the access supplier would not choose to withdraw cooperation when its long-distance affiliate has a small share of the long-distance market. In their numerical example, a share lower than about 13 percent means that the access supplier that withdraws cooperation loses more access profit from its independent long-distance customers than it gains in profit from its long-distance subsidiary. There are three reasons why this result should not be taken seriously: (1) It is completely unrealistic and contrary to basic principles of economics to expect the managers of the long-distance affiliate to ignore the benefits that expansion of their output conveys upon the parent. The affiliate should expand to the point where the combined profit of parent and affiliate is maximal. As noted above, when the affiliate behaves in this rational way, the parent has an unambiguous incentive to

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[12] David S. Sibley and Dennis L Weisman, "Raising Rivals' Costs: The Entry of an Upstream Monopolist into Downstream Markets," Kansas State University, March 1997. An earlier paper by the same authors, "Competitive Incentives of Vertically Integrated Local Exchange Carriers," November 1995, may have created the impression that a monopolist in the access market may choose not to raise its rivals' costs under some circumstances, but I believe that the March 1997 paper states the authors' current beliefs about how to analyze this issue.

[13] "Raising Rivals' Costs," p. 11, Theorem R4.

[14] *Ibid.*, pp. 15 and 16.

withdraw cooperation. (2) The result applies only for very low market shares for the affiliate in long distance. Most projections for the market shares of major local carriers in long distance are well above 13 percent. (3) Sibley and Weisman only consider tiny increases in costs induced by the withdrawal of cooperation.[15] The access supplier *always* has an incentive to impose larger cost increases on its long-distance rivals.

98. Sibley and Weisman suggest that there is a possibility that the access supplier will not have an incentive to withdraw cooperation during the transition period before its long-distance affiliate achieves its equilibrium market share. They consider what they call the conditional equilibrium of their model, where they arbitrarily set the sales of the affiliate below the level predicted by the model.[16] Their approach here has no grounding in the received theory of oligopoly. The model is meaningless without adding elements that explain why the long-distance affiliate is less successful than the model predicts. It is reasonable to suppose that costs of rapid expansion limit the affiliate's market share in the early years. Nicholas Economides has shown that the access seller has an incentive to withdraw cooperation even when its long-distance affiliate has a cost disadvantage.[17] Thus, Sibley and Weisman are reasonable in suggesting that it will take time for the access seller to reach its long-run equilibrium share, but they are incorrect in suggesting that the access seller will continue to cooperate with its long-distance rivals during the transition period. In a full analysis, the long-distance subsidiary would face an adjustment cost that explained why its market share did not rise immediately to its longer-run equilibrium. That is, in the period immediately after entry, the subsidiary would have the cost disadvantage considered in Economides's analysis. As he shows, the access seller would have an unambiguous incentive to withdraw cooperation from the moment its subsidiary entered the long-distance business.

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[15] In technical terms, Sibley and Weisman take the derivative with respect to the cost increase at the point where the cost increase is zero. In fact, the combined profit becomes an increasing function of the cost increase for relatively small cost increases—the region where the derivative is negative is very small.

[16] *Ibid.*, pp. 9-13.

[17] "The Incentive for Non-Price Discrimination by an Input Monopolist," Stern School of Business, New York University, January 1997, revised April 1997.

99. Sibley and Weisman responded to these criticisms recently.[18] First, they propose that principal-agent theory provides a way to make a subsidiary behave in ways contrary to the interests of the parent. They suggest that this may happen spontaneously, because the parent is unable to provide incentives that make the subsidiary behave in the parent's interest. Their discussion is purely by way of example and conjecture—they mention that managers of subsidiaries may maximize profits in order to obtain better jobs in other firms. But there is no evidence that shareholders are being deprived of value by this type of conduct in any quantitatively important way, and plenty of evidence overall that firms are operated in their shareholders' interest. In any case, as I pointed out above, even when the subsidiary maximizes its own profit, two other extreme assumptions are needed to eliminate the incentive for the local phone company to withdraw cooperation from its long-distance rivals: a small long-distance share and a small potential cost increase.

100. Sibley and Weisman concede that it is possible that the market share of the local phone company's long-distance affiliate may rise into the region where they find that the company has an incentive to withdraw cooperation. They suggest that the company will cooperate with its rivals until its long-distance market share reaches the critical point. Since the evidence from Connecticut suggests that the critical point will be passed quickly, this point has little importance.

101. As I discussed earlier, a proper application of the Cournot model—one that recognizes that costs of adjustment limit the new seller's market share at the outset—would show that the parent always has an incentive to withdraw cooperation from the rivals of its long-distance subsidiary. Sibley and Weisman suggest that the appropriate way to model the transition is the gradual release of a capacity constraint, in which case the model would give their result. But the idea of a capacity constraint is silly, given that Ameritech plans to offer long distance by using the facilities of a large established carrier. In reality, the proper model is one where Ameritech faces a temporarily higher cost, but still has a fairly flat marginal cost schedule, precisely the case considered by Economides.

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[18] *Affidavit of David S. Sibley and Dennis L. Weisman on behalf of SBC*, May 17 1997

102. Sibley and Weisman do not even comment on my point that their focus on infinitesimal increases in rivals' costs masks the point that the parent local carrier would always choose to impost large cost increases on its long-distance rivals. It remains my conclusion that under all reasonable assumptions, analyses of the type they have conducted agree that it is invariably in the parent's interest to withdraw cooperation from long-distance rivals.

H. Analyses of the Consequences of Vertical Integration

103. A number of authors have developed formal models to evaluate the effects on social welfare of vertical integration by an access supplier into long distance. Welfare gains can come from two sources. One is the increase in competition that could occur from the addition of another long-distance seller. The other is the effect of adding a long-distance seller that does not pay high access charges but instead pays the actual cost of access.

104. Professors Sibley and Weisman consider the first source.[19] They assume that, prior to entry by the access supplier, there is market power in long distance and price is above cost. Specifically, there is a single monopoly long-distance carrier. When the local carrier enters, the long-distance market becomes perfectly competitive, price falls to marginal cost (including the access fee), and quantity increases, improving consumer welfare. Because entry of the access supplier triggers a move to perfect competition, where no seller earns any profit, the entire motivation for entry by the access seller is the increased volume of access that results from the reduction in the long-distance price.

105. Sibley and Weisman's result turns on a critical assumption. Prior to entry, long distance is a monopoly; after entry, long distance is perfectly competitive. As I have shown earlier, long distance has become substantially competitive today without significant control of long-distance by access suppliers. Apart from cost issues, there is no reason to expect that the presence of access suppliers in the long-distance market would result in lower prices. As I note elsewhere in this affidavit, in those

[19] Sibley and Weisman, "Competitive Incentives" Sections II and III.

instances such as local toll and Connecticut long distance, access suppliers are invariably high-price sellers of long-distance services.

106. One important issue, considered in the previous section and earlier in this affidavit, is the ability of the access supplier to impose cost increases on its long-distance rivals by withdrawing cooperation. Given that long-distance entry by access suppliers is unlikely to affect the price of long distance at all except for cost effects, and the incentive for the access supplier to withdraw cooperation and raise costs, the balance tilts decisively in favor of the existing principle of structural separation of access supply and long distance, under current conditions.

I. Cost Shifting from Unregulated to Regulated Businesses

107. The regulation of a partially regulated, partially unregulated firm is a challenge. The firm has an incentive to report costs of its unregulated activities as if they were costs of regulated ones, if regulation has any tendency to reimburse those costs. Two inefficiencies flow from cost shifting of this type: First, the overpricing of regulated local service results in a loss of consumer welfare. Second, if the local carrier faces less than the full social cost of the inputs they use in long distance, they will use excess inputs. Cost shifting always results in a net loss of social welfare, even if it depresses the price of long distance. In recognition of this problem, the Telecommunications Act requires the local carrier initially to sell long-distance services through a separate subsidiary.

108. When a local carrier uses resources from its local services to provide long-distance services, it has shifted the costs to the disadvantage of the telephone user. Because regulation in almost all areas amounts to at least partial reimbursement of costs, the effect of cost shifting is to subsidize resources for long distance. This remains true even if decision-making is completely integrated between the local and long-distance parts of the local carrier and strictly serves the shareholders' interests. This ability to shift long-distance costs to its local services means a local carrier could remain as a seller in a long-distance market even if it has higher true costs than its rivals. It is economically inefficient for the local carrier to provide output at high cost when the same output could be provided at a lower cost by another long-distance provider.

109. Unlike Ameritech's experts Professors Gilbert and Panzar, who believe that cost shifting is irrelevant to the modern telephone industry because of price caps,[20] I believe that cost shifting continues to be a potential source of economic inefficiency and that the proper goal of regulation of the industry should be economic efficiency in the sense of net consumer welfare. On balance, consumers will be worse off, and telecommunications markets will be less efficient, if the local carrier shifts substantial costs from long-distance services to regulated activities.

110. Professors Gilbert and Panzar conclude that price-cap regulation eliminates the threat of cost shifting. I think this conclusion fails to deal with the reality of regulation. Under price-cap regulation of local service rates, regulators must still determine the level of the cap by reference to some cost standard. The incentive for cost shifting remains unless regulators obtain price caps from sources entirely unrelated to the actual costs or profits of the telephone companies they regulate. Even if the regulators set the initial price cap without reference to actual cost, the local carriers still have an incentive to shift costs because regulators are likely to respond to unexpectedly low or high profits in regulated service by raising or lowering the price cap or ending the price cap regulation altogether.

111. The incentive for cost shifting remains unless regulators can regulate prices from sources entirely unrelated to the actual costs or profits of the telephone companies they regulate. Under regulation based in any way on cost, even with a long lag, the local carrier has an unambiguous incentive to shift costs because regulators will respond to changes in profits in regulated service by raising or lowering prices.

IV. Competition and Performance in Long Distance

112. Proponents of a policy permitting local telephone companies to control long-distance carriers have suggested that the addition of a new carrier

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[20]*Joint Affidavit of Richard J. Gilbert and John C. Panzar on Behalf of Ameritech Michigan*, pp. 31-32.

would break down high uncompetitive pricing in the market. In this Part of the affidavit, I examine the potential benefits to competition in long distance from control of sellers by local telephone companies. How strong is existing competition? Would the addition of another significant long-distance carrier deliver benefits to the long-distance consumer, putting aside the harm that would be caused if a local phone company controlled the new long-distance carrier?

113. I have carried out a study of competition in the long-distance market using standard economic analysis. I find that the long-distance industry is substantially competitive. The industry's performance has been exceptional since divestiture in 1984—long-distance carriers have delivered steady improvements in service at continually declining prices.

114. The long-distance market in the United States is served by four larger carriers—AT&T, WorldCom, MCI, and Sprint—together with numerous others who offer services on partial national networks, facilities leased from other owners, or who resell services purchased in bulk from other carriers. In my opinion, the evidence shows strongly that these carriers compete rather than collude. The result of this competition has been benefits to the consumer in the form of substantial reductions in the price of long-distance service as well as numerous technical improvements and the development of new services.

115. The primary evidence in favor of the hypothesis of strong competition and superior performance is the behavior of prices in the long-distance market. Proper measures of price—ones that take appropriate account of the shift toward highly favorable bargain pricing plans—show huge reductions in prices. They also suggest that competition has brought the price of long distance close to the level of cost. The structure of the industry is conducive to strong competition. There are no important barriers to entry. Because there are fluid markets for basic long-distance capacity, entry can take many different forms.

A. Performance of the Long-Distance Industry

116. Increasing competition in the long-distance industry has delivered important benefits to the American economy. Traditionally, long-distance

service was available only from AT&T. Regulation prevented other companies from offering long-distance service. During the 1970s, MCI waged an uphill battle to obtain the right to offer service in competition with AT&T, but there was still little rivalry in the industry by the early 1980s.

117. Divestiture in 1984 started the transition to competition in long distance. The mid-1980s saw an explosion of service by long-distance carriers other than AT&T. During this time, MCI and Sprint expanded nationwide networks and gained acceptance as alternatives to AT&T. Divestiture was successful at stimulating major new investments with corresponding increases in market shares by new entrants to the long-distance market.

B. Prices for Long Distance

118. The public has gained substantially from this structural transformation of the long-distance industry. The primary indicator of these gains is the sharply declining price of long-distance service. Prior to the introduction of competition in long distance, the price was stable in relation to prices in general. With the advent of competition, particularly with the divestiture of long-distance services from local telephone companies at the beginning of 1984, and the provision of equal access to competing long-distance carriers, the price of long-distance service fell precipitously.

119. In my opinion, the best available way to measure the price of long distance is by revenue per minute, the ratio of toll call revenue (billed by the minute) to the number of billed minutes. Although revenue per minute is not a perfect measure of the price of long distance, it is the best available measure.[21] Figure 1 shows revenue per minute for AT&T, MCI, and Sprint, stated in 1996 dollars, adjusted by the GDP deflator. To avoid mix effects,

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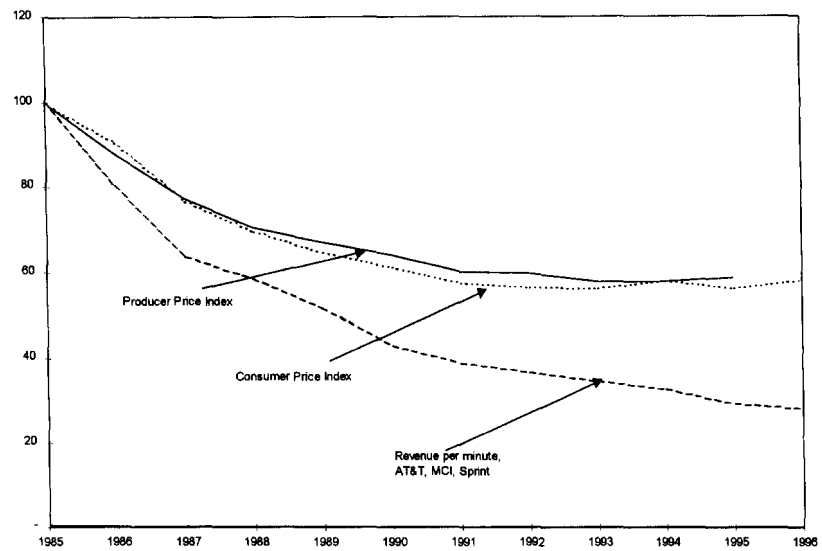
[21]One of the potential problems in revenue per minute as a measure of prices is mix effects—revenue per minute could rise even though each type of call was cheaper per minute because customers were making a larger fraction of expensive calls, such as credit-card calls. I looked at confidential MCI data by detailed product category to determine that mix effects are a minor influence on MCI's revenue per minute; essentially all the decline comes from lower prices for calls and none from changes in the mix of calls. It is entirely reasonable to conclude that mix effects are also a minor influence on revenue per minute industry-wide.

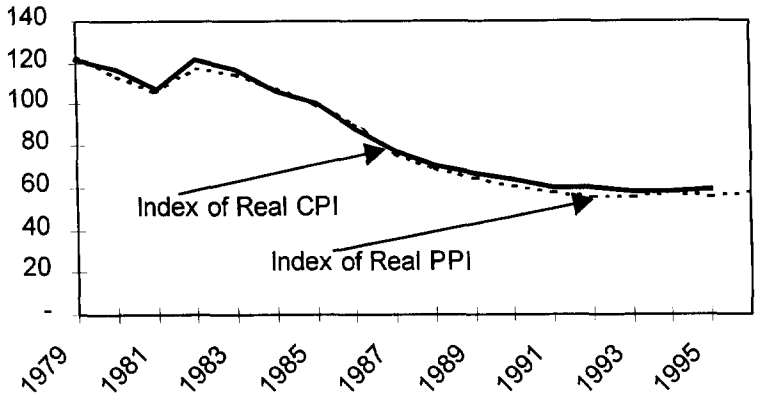
these calculations exclude international calls. Figure 1 shows that revenue per minute has declined substantially and that the declines are continuing to occur.

Figure 1. Index of Revenue per Minute, Relative to the General Price Level



120. Over the period from the late 1970s to the present, only the price indices compiled by the U.S. government are available as consistent measures of prices. Figure 2 shows the history of the price of long-distance services as measured by the official price indices of the U.S. government. The indices are, first, the component of the Consumer Price Index (CPI) for interstate toll calls and, second, the component of the Producer Price Index (PPI) for interstate message toll service. Both indices exclude international calls. Figure 1 presents them as ratios to a general price index, the implicit deflator for Gross Domestic Product (GDP).

Figure 2. Government Indices of Long-Distance Prices Relative to the General Price Level



121. The decline in the CPI measure, relative to the GDP deflator, was 33 percent between 1983 and 1987, and the decline in the PPI was 34 percent. The CPI declined by 24 percent between 1987 and 1996, and the PPI declined 24 percent between 1987 and 1995 (the PPI after June 1995 is inconsistent with prior data).

122. Three factors were responsible for the sharp decline in the price of long-distance service relative to the general price level over the past decade: competition made possible by divestiture, improvements in productivity, and declining access charges paid to local telephone companies.

123. Although these data from the Bureau of Labor Statistics (BLS) show a sharp decline in the long-distance prices, they do not present a complete picture of the decline in long-distance prices. The evidence suggests that BLS data understate recent declines in those prices. Construction of price indices for products such as long-distance service presents a serious challenge. For the CPI, the BLS prices a fixed basket of calls placed by households. It applies the standard rates, without considering any more favorable pricing plans such as flat rates. Here, the CPI's long-distance index departs from the standard procedures of the CPI because it is not an index of transaction prices. The long-distance component of the CPI understates price declines that occur when more favorable plans are

introduced. In addition, the CPI's procedure for the introduction of new sellers and new products understates price declines.[22] In light of the extensive use of pricing plans that are far more attractive than the standard rates in the long-distance market since divestiture—for example, nearly 80 percent of MCI's customers use a plan that is cheaper than standard rates—the omission of these factors from the CPI has led to a substantial understatement of price decreases. An FCC document warns users that the CPI (and the PPI) are unreliable measures for long-distance prices: "Price indexes are less reliable when industries are changing rapidly." The FCC document further states that "Because of these sorts of difficulties, measures of average revenues are sometimes used as alternatives to price indexes."[23]

C. The Role of Declining Access Charges in Lowering Long-Distance Prices

124. Long-distance carriers pay local telephone companies access charges for carrying long-distance calls from the caller's business or home to the point where the long-distance carrier picks up the call. They pay a second access fee to a local telephone company to deliver the call to its ultimate destination. During the 1980s, the FCC imposed important changes on the structure of access fees—early in the decade, most of the fee was imposed as a per-minute charge on long-distance calls, whereas by the end of the decade, part of the fee had been shifted to a fixed monthly charge per telephone line. These access fees have declined substantially since 1984, but long-distance carriers still pay about 40 percent of their revenues to

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[22]A good example is the following: Prior to 1987, the CPI included only AT&T calls. When other carriers were added to the index in 1987, the new index was adjusted so that it had the same value as the old index in 1987. Although the cost of a basket of calls was lower if some of the calls were made on other carriers, the effect was eliminated by a multiplicative adjustment. Hence the consumer benefit from the lower prices of other carriers before 1987 never was recorded in the CPI.

[23] Section 5, *Limitations of Price Indexes for Telephone Services*, FCC Trendline Report, Industry Analysis Group, Common Carrier Bureau, Federal Communications Commission.

local telephone companies as access charges.[24] The FCC has recently ordered further reductions in access fees.

125. Ameritech's experts have concluded that long-distance rates have fallen by less than the amount that access charges have fallen. In this section I will show, on the contrary, that long-distance prices have fallen, relative to the general price level, even when access charges are netted out. Competition and productivity growth have been important factors in the improved performance of the long-distance industry over the past decade.

126. The table below shows gross revenue per minute for the three largest carriers on the top line, stated as 1996 dollars per minute. The table also shows the industry average access charge per minute of call, again in 1996 dollars per minute.[26] The average access charge fell from 22 cents per minute in 1985 to nearly 7 cents in 1996 (in 1996 dollars). Revenue per minute after subtracting access costs fell from 30 cents per minute in 1985 to less than 8 cents in 1996 (in 1996 dollars), a decline of 74 percent. Claims that the only reason for the decline in long-distance prices is the declining cost of access are incorrect.

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[24] *Telecom Service - Long Distance*, Merrill Lynch & Co., Global Research & Economics Group, 1996, Table 6.

[25] *Crandall-Waverman Affidavit*, p. 36

[25]This calculation is based on the assumption that there are two minutes of access per minute of call (approximately one minute on the originating end and one minute on the terminating end). It also adjusts for call setup time and for access by means other than the local switched network.

Year	*Revenue per minute, 1996 dollars*	*Access charge per minute, 1996 dollars*	*Revenue per minute net of access charges, 1996 dollars*
1985	.515	.217	.298
1986	.413	.197	.215
1987	.328	.164	.164
1988	.302	.145	.157
1989	.267	.125	.142
1990	.222	.104	.118
1991	.200	.091	.109
1992	.190	.085	.105
1993	.178	.081	.097
1994	.168	.079	.089
1995	.151	.074	.077
1996	.145	.068	.077

For details of these calculations, see Appendices A and B.

127. The table shows that the fall in the price of long-distance service net of access charges occurred in both the period immediately following divestiture and in more recent years. Although falling access charges were an important factor in the substantial decline in the price of long distance over the period, other factors were also significant, reflecting the successful performance of the competitive long-distance industry in the United States.

128. Jim Lande of the Industry Analysis Division, Common Carrier Bureau of the FCC, has made calculations of revenue per minute for interstate direct dialed calls.[27] His results are:

Year	*Revenue per minute, net of access charges, for a direct dialed call in 1996 dollars*
1992	$0.086
1993	0.083
1994	0.078
1995	0.074

Net of access charges, revenue per minute in 1996 dollars fell by 18 percent over the three years from 1992 to 1995. Lande's results strongly confirm the hypothesis that declining access charges were only one of the factors leading to the declining price of long distance.[28] The growing efficiency and improving competitive performance of the industry also made a large contribution, as is revealed by the data calculated net of access charges.

129. Most long-distance carriers sell their products under various pricing plans. Among these is a higher rate called the standard rate. This rate is charged to a customer who signs up for service without asking about the rates that are available and without being attracted by the promotion of a better rate. Standard rates are in the range of 28 cents per minute during the day and 18 cents in the evening; they are also slightly differentiated by distance. These rates have the same role that "full fares" have in the airline business—they are paid for a small fraction of the total volume of sales by people who cannot or will not arrange their lives to receive much better prices. The standard rates of AT&T, MCI, and Sprint are quite similar and

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[27] "Telecommunications Industry Revenue: TRS Fund Worksheet Data," December 1996.

[28] Differences between Dr. Lande's calculations of revenue per minute and mine include the following: (i) he uses only DDD calls; I include all calls; (ii) he uses only interstate data; I use interstate and intrastate data; (iii) he uses actual minutes; I use billed minutes; (iv) he uses average access charges; I use marginal access charges; (v) he includes all carriers, I include only AT&T, MCI, and Sprint.

tend to move together. They have been rising somewhat in the past few years, most recently in November 1996.

130. Most long-distance service is purchased at far better prices than the standard rate, just as a large fraction of all airline travel is at fares that are far below the full fare. In the airline market, better fares are available in two ways: First, businesses negotiate special fares directly with airlines. Second, for individual travelers, airlines quote highly advantageous fares for travelers who take the trouble to make their arrangements in advance. Full fare transcontinental travel costs about 35 cents a mile whereas the cheaper fares are around 9 cents per mile. Similarly, the long-distance caller who seeks out a good deal can make calls across the country for 10 cents a minute. And the price paid by businesses can be pushed down even more if a way can be found to avoid the access charges of around 5 cents that would otherwise place an absolute floor on long-distance prices.

131. Here is a list of some of the deals that long-distance carriers currently offer for interstate calling for residential customers in Michigan.

Carrier	*Name of plan*	*Terms*
AT&T	One Rate Plus	10 cents per minute at any time, $4.95 per month
MCI	MCI One	12 cents per minute at any time for purchases over $25 per month, 15 cents per minute for first $25, $5 minimum.
Sprint	Sprint Sense Day Plan	15 cents per minute at any time, no fee, no minimum purchase
WorldCom	Home Advantage	25 cents peak, 10 cents off peak
Wiltel		10.9 cents per minute at any time, no fee, no minimum
Telco Communications	Long-Distance Wholesale Club	9.5 cents per minute plus $4.95 per month
VarTec Telecom	Dime Line	10 cents per minute, 3 minute minimum, $5 per month
Frontier		10.9 cents per minute at any time, no fee, no minimum

Sources: Carriers and *Wall Street Journal,* "Coy Telecom Giant Woos AT&T's Customers," April 15, 1997, p. B1.

These rates are substantially lower than rates available even a year ago. The prices paid for most calls have fallen even though standard rates have risen.

132. Almost 80 percent of MCI's customers use plans other than the standard rate.[29] Many of the advantageous plans described above are available to all users, regardless of their level of usage. Moreover, the availability of these plans is a frequent discussion point in the media. Some of the lowest rates are available without presubscription—you can take advantage of the 9.5 cents per minute rate from the Long-Distance

[29] Based on MCI data. See elaboration in the next section.

Wholesale Club by dialing their access code, 10297, without any preliminary arrangement.

D. Prices Paid by Low-Volume Long-Distance Customers

133.Professor MacAvoy believes that the existence of low-price plans creates an incorrect impression of competition because most customers do not receive the benefits from these plans.[30]The flat-rate bargain plans that provide the most attractive residential prices today are not volume based. These low-price plans are open to all users.

134. In fact, most residential customers take advantage of flat-rate low-price plans. I have studied data from MCI on the distribution of customers and revenue across pricing plans, for residential customers. About 22 percent of MCI's residential customers pay under the standard rates—the remaining 78 percent use plans with lower rates, some of which depend on volume. Not surprisingly, those using the standard rate tend to spend little on long distance. In the month I examined, 12 percent of MCI's residential revenue came from customers using the standard rate. The remaining 88 percent of MCI's residential business was with customers using more advantageous price plans. Of those that pay standard rates, 46 percent have bills less than $1.50 per month in an average month.

135. Professor MacAvoy cites contrary data from PNR and Associates that 65 percent of residential customers pay standard prices rather than using lower-price plans.[31] First, a substantial number of these customers, perhaps as many as one-fourth, do not subscribe to a low-price plan because they have no toll usage.[32] More importantly, the PNR sample is badly biased, through its construction, in favor of smaller users.

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[30] *Affidavit of Paul W. MacAvoy on Behalf of Ameritech Michigan,* May 12, 1997, p.46.

[31] *Ibid.,* p. 67.

[32] PNR and Associates provided MCI with promotional documents for a program known as Bill Harvest II. The discussion in this paragraph and the next are based on these documents.

136. PNR wrote to 25,000 households requesting copies of their local telephone bills, long-distance bills, cable TV bills, and cellular bills. PNR paid $5 to each responding household. PNR received telephone bills from 8,731 households, for a response rate of about 35 percent.[33] Whenever a survey is performed, an analysis of non-respondents must be done to insure that the respondents are not biased, particularly when the response rate is this low. No such study has been done to validate the PNR sample, to my knowledge. There is a presumption that the response rate will be highest in lower-income households, to whom the $5 payment is more significant. No conclusion about long-distance customers in general can possibly be drawn in view of the bias.

137. The bias from selective response appears to be serious. MCI has carried out a comparison of data from PNR on purchases from MCI with similar data on purchases by all of MCI's customers. According to PNR, about 54 percent of MCI residential customers spent $10 or less on long distance. In the MCI data, the corresponding fraction is only 32. Plainly, the highest usage customers were under-represented in the sample. This analysis of MCI suggests that MacAvoy estimate that 65 percent of telephone customers pay standard long-distance rates is a serious overstatement.

E. Issues in the Measurement of Cost

138. Economists generally agree that the relation between price and marginal cost is useful for understanding issues about competition and performance. But making valid inferences about industry performance from the relation of price to marginal cost is a challenge. Although the textbook perfectly competitive seller sets its marginal cost equal to price, it is difficult to relate departures from that equality into a suitable measure of performance. An industry could have marginal cost below price but still be workably competitive. In such an industry, the potential entrant would not perceive profit. Professor MacAvoy's analysis of price-cost margins is unhelpful because he fails to consider all of the costs involved in making a

[33] *Ibid.*, PNR information about Bill Harvesting II.